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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/973,757	10/11/2001	Masatake Tamaru	VX012372	7173

21369 7590 04/25/2008

POSZ LAW GROUP, PLC
12040 SOUTH LAKES DR.
SUITE 101
RESTON, VA 20191

EXAMINER	
CHOI, PETER H	
ART UNIT	PAPER NUMBER
3623	

MAIL DATE	DELIVERY MODE
04/25/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/973,757	TAMARU, MASATAKE	
	Examiner	Art Unit	
	PETER CHOI	3623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 February 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *33-64* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *33-64* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 1, 2008 has been entered.

Response to Amendment

2. Claims 33, 38, 46, 48, and 62 have been amended in the submission filed on February 1, 2008. Claims 33-64 are pending.

Response to Arguments

3. Applicant's arguments filed February 1, 2008 have been fully considered but they are not persuasive.

Applicant argues that submission for a request for continued examination (RCE) results in the withdrawal of the finality and that traversal of previously presented Official Notice would be considered timely.

The Examiner respectfully disagrees. As per MPEP 2144.03 (C),

> If applicant does not traverse the examiner's assertion of official notice or applicant's traverse is not adequate, the examiner should clearly indicate in the next office action that the common knowledge or well-known in the art statement is taken to be admitted prior art because applicant either failed to traverse the examiner's assertion of official notice or that the traverse was inadequate. If the traverse was inadequate, the examiner should include an explanation as to why it was inadequate.

The Examiner asserts that previous Office Actions (see non-final rejection mailed September 12, 2006, and final rejection mailed May 7, 2007) clearly explained why the traversal by Applicant was deemed to be inadequate, and clearly indicated that the statements of Official Notice were being admitted as prior art. Although filing a request for continued examination does indeed result in the withdrawal of the finality of an Office Action, filing a request for continued examination would not result in any previously applied reference to be withdrawn from the record, nor does it serve to alter the level of ordinary skill in the art at the time of invention.

Applicant further argues that Official Notice cannot be used in lieu of a prior art document in applying KSR. Applicant asserts that KSR never relied on Official Notice, and that, in order for a conclusion of obviousness to be explicit for review, there must be a written record and/or documentary support, which are not provided by Official Notice.

The Examiner respectfully disagrees. KSR dictates that the ***analysis*** of background knowledge possessed by a person having ordinary skill in the art should be made explicit. KSR does not prohibit the use of Official Notice as a basis of obviousness in establishing the knowledge of a person of ordinary skill in the art, nor explicitly state

that only prior art document is acceptable in establishing this background knowledge. KSR holds that when formulating an obviousness rejection, an examiner should expect that a person of ordinary skill in the art will exercise ordinary creativity, common sense, and logic, and that the examiner should ensure that ***the written record includes findings of fact concerning the teachings of the applied references, and when necessary, the general state of the art***. (emphasis added)

KSR establishes the examiner as the factfinder when resolving the Graham inquiries, and that the examiner must ensure that the written record includes findings of fact concerning the state of the art and the teachings of the references applied by including explicit findings as to how a person of ordinary skill would have understood prior art teachings, or what a person of ordinary skill would have known or could have done. The determination of obviousness is made based on what a person of ordinary skill would have known at the time of the invention, and on what such a person would have reasonably expected to have been able to do in view of that knowledge. ***This is so regardless of whether the source of that knowledge and ability was documentary prior art, general knowledge in the art, or common sense. Prior art is not limited to just the references being applied, but includes the understanding of one of ordinary skill in the art.*** (emphasis added).

Applicant argues that the teachings of Melby and/or Gudat do not contemplate or suggest a work management system including the following structures and arrangements:

(i) management information production means automatically producing management information based on said work machine information and on said data stored in said database, provided at said server apparatus; and/or

(ii) said server apparatus automatically producing a scheduled work plan or automatically produces said management information based on said transmitted work machine information and on said data stored in said database.

The Examiner respectfully disagrees.

As per (i), Melby et al. teaches a work machine management system that automatically generates maintenance and warranty reports (i.e., automatically producing management information) based on data points received from work machines (i.e., work machine information) and data stored in a database of data for managing work machines (i.e., data stored in a database for storing data for managing a plurality of work machines), including real-time and historical information, and performed maintenance.

Maintenance and warranty reports are automatically generated, and work orders are generated based on received work machine information that determines whether further maintenance is needed or necessary **(determine that further preventative**

maintenance is required) based on said work machine information and on said data stored in said database **(By analyzing the [asset] data points, certain maintenance trends can be analyzed and problems can be anticipated before they affect asset utilization. For example, if it turns out that asset 31 has a tendency to need new batteries after a certain period of usage, the need for such batteries can be anticipated and stocked on site when appropriate to facilitate maintenance. As shown in Fig 4C, once the various trends have been analyzed for assets 31, at decision point 80 it is determined whether preventative maintenance is required. If it is required, the maintenance is performed as shown at point 82 and the information is stored in database 78. The asset data points are then analyzed again until it is determined that no further preventative maintenance is required; First, by providing the assets with the data acquisition devices 32 and the communications system 33 and 34, the operational characteristics and other information regarding the assets 31 is automatically sensed and transmitted to the analysis controller 51 on a real time basis, without requiring human intervention or assistance. Second, the analysis controller 51 is programmed to analyze such information as it is received and to automatically generate maintenance and warranty reports in response thereto)**, provided at said server apparatus [Column 12, lines 9-21, 56-57, Column 15, lines 30-38].

Transmission of information gathered and stored within local controller 36 regarding the individual operating characteristics for each of the forklifts 31 to remote

analysis system 50 results in automatic updating of the record contained in the analysis controller with the latest information regarding the status of the asset, without any human intervention. Based on the updated information contained in the record of the asset, analysis controller 51 generates an electronic maintenance report if a sufficient period of time or usage has elapsed as to trigger the performance of periodic routine maintenance for that asset 31 [Column 9, line 63—Column 10, line 21].

Thus, the Examiner asserts that Melby et al. does indeed teach management information production means automatically producing management information based on said work machine information and on said data stored in said database, provided at said server apparatus.

Similarly, as per (ii), Melby et al. teaches a work machine management system that automatically generates work orders, and maintenance and warranty reports (i.e., automatically producing a scheduled work plan and management information) based on data points received from work machines (i.e., work machine information) and data stored in a database of data for managing work machines (i.e., data stored in a database for storing data for managing a plurality of work machines), including real-time and historical information, and performed maintenance. The remote analysis system automatically updates individual records associated with each of the assets with the information received. Information associated with the maintenance is also recorded electronically to maximize efficiency, provide historical trends, automate billing, and

control inventory levels. In addition, records relating to particular assets are updated with the information contained in the maintenance invoice.

Work orders **(work order 166)** are generated, based on said transmitted work machine information and on said data stored in said database **(work order 166 is generated based on approved preventative maintenance and includes all of the critical operating data required to effectively schedule and carry out the maintenance, including hour meter reading, any fault codes, asset identification criteria, operator of record, contact information and asset location. Moreover, based on information contained within the fault code or retrieved from the knowledgebase, information concerning anticipated parts may also be provided as well as the nearest location from where they may be retrieved. Finally, the work order 166 preferably contains the past recent history of the particular asset 31 so that the mechanic can use this information to expedite maintenance; In response to such information [information received associated with each of the assets], the remote analysis system automatically analyzes the newly provided information and schedules maintenance as required; First, by providing the assets with the data acquisition devices 32 and the communications system 33 and 34, the operational characteristics and other information regarding the assets 31 is automatically sensed and transmitted to the analysis controller 51 on a real time basis, without requiring human intervention or assistance. Second, the analysis controller 51 is programmed to analyze such information as it is received**

and to automatically generate maintenance and warranty reports in response thereto), and transmitting that scheduled work plan so produced to said at least one leader work machine through said second communication means **(work order 166 is sent electronically to appropriate maintenance personnel that contains all of the critical operating data required to effectively schedule and carry out the maintenance)** [Column 15, lines 30-38, Column 17 lines 1-20, abstract].

Based upon the updated information contained in the record of the asset 11, the analysis controller 13 is programmed to perform a fourth step 24 of the prior art method 20, wherein it was determined whether a sufficient period of time or usage had elapsed as to trigger the performance of periodic routine maintenance for that asset 11. Typically, such determination was made by determining the amount of the elapsed time or usage of the asset 11 (by comparing the most recent indication of the date or amount of usage of the asset 11 with the previous date or amount of usage contained in the record stored in the analysis controller 13), and by comparing such elapsed time or amount of usage with a predetermined standard (also contained in the record of the asset 11 stored in the analysis controller 13). If it was determined that a sufficient amount of elapsed time or amount of usage had occurred, the method 20 branched from the step 24 to a step 25, wherein a hard copy maintenance report was generated by the output device 15. [Column 5, lines 43-59]. Regardless of whether a sufficient amount of elapsed time or amount of usage had occurred, management reports are generated [Column 6, lines 1-13].

Thus, the Examiner asserts that Melby et al. does indeed teach a server apparatus automatically producing a scheduled work plan or automatically produces said management information based on said transmitted work machine information and on said data stored in said database.

Official Notice

Applicant has attempted to challenge the Examiner's taking of Official Notice in the Office Action mailed December 20, 2005. There are minimum requirements for a challenge to Official Notice:

(a) In general, a challenge, to be proper, must contain adequate information or arguments so that *on its face* it creates a reasonable doubt regarding the circumstances justifying the Official Notice

(b) Applicants must seasonably traverse (challenge) the taking of Official Notice as soon as practicable, meaning the next response following an Office Action. If an applicant fails to seasonably traverse the Official Notice during examination, his right to challenge the Official Notice is waived.

Applicant has not provided adequate information or arguments so that *on its face* it creates a reasonable doubt regarding the circumstances justifying the Official Notice. Therefore, the presentation of a reference to substantiate the Official Notice is not deemed necessary. The Examiner's taking of Official Notice has been maintained.

Bald statements such as, "the Examiner has not provided proof that this element is well known" or "applicant disagrees with the Examiner's taking of Official Notice and hereby requests evidence in support thereof", are not adequate and do not shift the burden to the Examiner to provide evidence in support of the Official Notice.

In the previous Office Action mailed December 20, 2005, notice was taken by the Examiner that certain subject matter is old and well known in the art. Per MPEP 2144.03(c), these statements are taken as admitted prior art because no traversal of this statement was made in the subsequent response. Specifically, it has been taken as prior art that:

- It is old and well known in the arts to notify relevant parties of the status and availability (or unavailability) of work machines at a site
- Connecting data terminals to an electronic communications network, such as the internet, is a step that is old and well known in the art

In the previous Office Action mailed September 12, 2006, notice was taken by the Examiner that certain subject matter is old and well known in the art. Per MPEP 2144.03(c), these statements are taken as admitted prior art because no traversal of this statement was made in the subsequent response. Specifically, it has been taken as prior art that:

- Displaying information is old and well known in the art
- It is old and well known in the art for work plans to comprise a plurality of tasks

- It is old and well known in the art to assign resources to scheduled tasks
- It is old and well known in the art to collect data regarding environmental conditions
- Local, federal and international ordinances, regulations, and laws govern acceptable noise levels and toxic chemical concentration limits for areas in which work is performed

Even though the statements of Official Notice stated above have already been admitted as prior art, support can be found as follows:

It is old and well known in the art to notify relevant parties of the status and availability (or unavailability) of a work machine at a site

- Kinugawa (US Patent #6,614,361) provides a construction machine management system that stores operating information. If operating information reaches a fixed amount, transmission section 184 transmits the operating information read out [Abstract]\
- Scholl et al. (US Patent #5,400,018) provides a method of relaying information from a vehicle at a work site to a remote location [Column 1, lines 6-8]. The information relayed between a vehicle and remote location may include relating information from a fleet of vehicles situated at a work site. Fault codes are generated with respect to needed repairs/maintenance of the

machine (i.e., machine unavailability/downtime) and transmitted to a remote location for instruction

- Boldys (US Patent #5,446,672) provides a machine monitoring system that detects each work cycle of the machine and generates a work cycle output signal. When the number of work cycle count signals equals a preset limit count, the computer generates a signal to alert the operator at the central station that machine maintenance is required [Abstract].

Connecting data terminals to an electronic communication network, such as the Internet, is a step that is old and well known in the art

- Kinugawa (US Patent #6,614,361) connect the personal computer terminal 621 of a construction machine to a satellite management company 622 through the internet [Figure 7, Column 14, lines 29-32]
- Scholl (US Patent #5,400,018) uses satellite communications network 212 to transmit information between a vehicle and a remote location [Abstract, Figure 3]

Displaying information is old and well known in the art

- Kinugawa (US Patent #6,614,361) provides management apparatus 20 that receives operating information of the construction machine, and comprises display section 201 comprising a CRT or the like displaying operating information subjected to data processing, as well as displaying the engine

start date and time and the engine stop date and time [Column 6, lines 31-39, Column 7, lines 8-12].

- Boldys (US Patent #5,446,672) provides a display of the number of machine work cycles on the switches at each machine unit [Abstract].

It is old and well known in the art for work plans to comprise a plurality of tasks

- Ertemalp (US Patent #5,745,110) teaches task management, in which tasks for a project are displayed using Gantt and PERT charts.
- D'Arrigo et al. (US Patent #5,848,394) teaches producing a work breakdown structure for a project that identifies and maintains a list of tasks and resources required to accomplish a project [Abstract]

It is well known in the art to assign resources to schedule tasks

- Ertemalp (US Patent #5,745,110) teaches project task management, in which resources are scheduled for tasks. Ertemalp also teaches that Microsoft Project is an example of a project management application that helps the user define project goals, plan tasks, and resources, display a project plan, carry out and manage the project. A project management schedule is composed of tasks. The schedule defines the sequence in which the tasks must occur, the resources needed to complete a task and calendar information about the tasks such as days and times. Project schedules containing task information

are typically displayed by three methods in the prior art, Tables, Gantt Charts, and PERT charts. A Table display consists of a group of rows and columns that designate a specific task and the information to be displayed for each task (e.g., task duration, start time and date, finish time and date, cost, etc.), respectively. A Gantt chart typically shows a list of tasks on the left side of a display and a bar chart on the right side of the display that graphically shows the task information on a timescale defined by the user. The PERT Chart uses statistical probabilities to calculate expected project durations and is typically used to show the dependencies between tasks in a task schedule. PERT Chart allows a user to create and display relationships between tasks based on these dependencies. [Column 1, line 22 – Column 2, line 7]

- D'Arrigo et al. (US Patent #5,848,394) teaches producing a work breakdown structure for a project that identifies and maintains a list of tasks and resources required to accomplish a project [Abstract]. Work breakdown structures facilitate the management of a project by allowing responsibility for tasks to be allocated, work to be monitored, and resources to be assigned
- Mora et al. (US Patent #6,161,113) teaches a computer-aided project notebook that incorporates a Work Breakdown Structure (WBS) to detail the project schedule [Column 10, lines 40-45].

It is old and well known in the art to collect data regarding environmental conditions

- Scholl et al. (US Patent #5,400,018) provides a method of relaying fault codes that are generated with respect to needed repairs/maintenance of the machine (i.e., working conditions/environment of the machine) and transmitted to a remote location for instruction.
- Wiemer et al. (US Patent #5,781,437) provides a system for controlling vehicles in which information such as the position of the vehicle is obtained from the surroundings [Abstract]. A video screen is provided for selectively displaying various kinds of sensor information from the surroundings.
- Stentz et al. (US Patent #6,363,632) provides an earthmoving machine equipped with a scanning sensor system operable to provide data regarding regions within an earthmoving environment [Abstract]. The earthmoving machine also provides an obstacle detector for detecting the presence of an obstacle within the earthmoving environment.
- Pfister (US Patent #6,370,452) provides autonomous vehicles that receive information from sensor nodes regarding the environment, such as the distance to a wall or the slope of a hill, which are used for navigation in a known or unknown environment [Column 1, lines 10-22]. Environment information includes relative distance and heading to nearby objects, obstacles and/or boundaries and local terrain type, which are used to aid the vehicle in traversing the environment more efficiently by avoiding obstacles or terrain for which the vehicle is not equipped to handle [Column 5, lines 25-30]

Local, federal and international ordinances, regulations, and laws govern acceptable noise levels and toxic chemical concentration limits for areas in which work is performed

- The Noise Pollution Clearinghouse (provided as reference 1-U) published a list of large US cities with city noise regulations and ordinances on June 10, 1998. The noise regulations are directed towards a plurality of situations, including construction areas.
- OSHA Regulations 1910.1200 (provided as reference 1-V) published safety regulations at a workplace for handling toxic and hazardous substances.
- The AEI-Brookings Joint Center (provided as reference 1-W) issued an analysis on the occupational exposure to toxic and hazardous substances (asbestos, tremolite, anthophyllite, and actinolite) as governed by OSHA. The standards published by OSHA apply to all industries covered by the Occupational Safety and Health Act, including the construction and maritime industries and general industry.

In the previous Office Action mailed May 7, 2007, notice was taken by the Examiner that certain subject matter is old and well known in the art. Specifically, Official Notice was taken that it is old and well known in the art to distribute information only to leaders, who in turn propagate said distributed information to subordinates as necessary. This taking of Official Notice was traversed by the Applicant; thus, support can be found as follows:

It is old and well known in the art to distribute information only to leaders, who, in turn, propagate the distribution of information to subordinates as necessary.

- Wolstenholme et al. (provided as reference 2-U) describes a plurality of management information systems, including an example of a scenario during a nuclear, biological or chemical (NBC) and enemy threat alarm and transmission. The transmission of the threat of an NBC strike is normally picked up using some form of sensing device, and once the possibility of a strike has been assessed as likely, this information is passed in the form of a warning to the various commanders who are potentially at risk. The warning is then passed down the chain of command, until it reaches the men on the ground or located in their vehicles.
- Gibson et al. (provided as reference 2-V) describes organizational communication. Downward communication is defined as the flow from individuals in higher levels of the hierarchy to those in lower levels. The most common forms of downward communication are job instructions, official memos, policy statements, procedures, manuals, and company publications.

Claim Rejections - 35 USC § 103

4. Claims 33-64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Melby et al. (U.S Patent 6,952,680) in view of Gudat et al. (US Patent #5,646,844).

As per claim 33, Melby et al. teaches a work machine management system for work machines that perform prescribed work by operation of a plurality of work machines, comprising:

(a) a plurality of work machines **(assets 11 – a plurality of pieces of movable industrial equipment; forklifts 31)**, said plurality of work machines respectively including a first communication means **(each of the forklifts 31 is further provided with a transmitter 33 or other communications system for transmitting the acquired data from the data acquisition device 32 to the remote analysis system 50 for analysis)** facilitating reciprocal communications **(transmitter 33 is preferably embodied as a wireless communications system, such as represented by an antenna 34; the transmitters 33 and the wireless communications systems 34 can be embodied as conventional radio frequency transmitters provided on each of the forklifts 31 that transmit electromagnetic signals; wireless communications systems 34 are adapted to transmit signals that are representative of the sense operating conditions of the forklifts 31 through space to a receiver 35; the data acquisition units 32 and the receivers 35 are in bi-directional communication with one another)** [Column 3, lines 55-57, Column 7, lines 5-8, 14-27, 38-39];

(b) a server apparatus **(remote analysis system 50)**, wherein at least one leader machine of said plurality of work machines **(local controller 36 that is adapted to receive and store data from each of the receivers 35 and to periodically**

transmit gathered and stored information regarding the individual operating characteristics to the remote analysis system 50 for analysis) and said server apparatus including second communication means **(modem 52 or similar communications device; conventional modem 37 or other communications device; electronic communications network, such as the internet 40)** facilitating reciprocal communications between said server apparatus and said at least one leader work machine of said plurality of work machines [Column 7, lines 62-67, Column 8, lines 23-30, 48-52];

(c) each of said plurality of work machines being provided with work machine information detection means **(data acquisition device 32 is provided on each of the forklifts 31 for sensing and storing one or more characteristics of the associated forklift)** for detecting work machine information **(operational characteristics of the particular asset 11 being tracked, such as the physical requirements or limitations of the asset (mast height, load capacity, types of tires, for example), the type of fuel used, and the period of time or usage between the performance of periodic maintenance; time duration of use (and non-use), distances traveled, the extent of fork usage, the nature of hydraulic system utilization, and the like)** [Column 4, lines 34-44, Column 6, lines 48-50, 52-63];

(d) a database **(analysis controller database 78)** storing data for managing said plurality of work machines **(real-time and historical information; maintenance information performed {step 82})**, and management information production means automatically producing management information **(determine that further**

preventative maintenance is required) based on said work machine information and on said data stored in said database **(local controller 36 will have gathered and stored therein a certain amount of information regarding the individual operating characteristics for each of the forklifts 31. The local controller 37 is programmed to periodically transmit the information stored therein to the remote analysis system 50 for analysis... The transmission of the information from the local controller 36 to the analysis controller 51 is automatically updated with the latest information regarding the status of the asset 31, without any human intervention. Based upon the updated information contained in the record of the asset 31, the analysis controller 51 next determines whether a sufficient period of time or usage has elapsed as to trigger the performance of periodic routing maintenance for that asset 31... If it is determined that a sufficient amount of elapsed time or amount of usage had occurred, the method 60 branches from the step 65 to a step 66, wherein an electronic maintenance report is generated; By analyzing the [asset] data points, certain maintenance trends can be analyzed and problems can be anticipated before they affect asset utilization. For example, if it turns out that asset 31 has a tendency to need new batteries after a certain period of usage, the need for such batteries can be anticipated and stocked on site when appropriate to facilitate maintenance. As shown in Fig 4C, once the various trends have been analyzed for assets 31, at decision point 80 it is determined whether preventative maintenance is required. If it is required, the maintenance is performed as shown at point 82 and the information is stored in database 78. The**

asset data points are then analyzed again until it is determined that no further preventative maintenance is required; First, by providing the assets with the data acquisition devices 32 and the communications system 33 and 34, the operational characteristics and other information regarding the assets 31 is automatically sensed and transmitted to the analysis controller 51 on a real time basis, without requiring human intervention or assistance. Second, the analysis controller 51 is programmed to analyze such information as it is received and to automatically generate maintenance and warranty reports in response thereto), provided at said server apparatus [Column 9, line 63—Column 10, line 21, Column 12, lines 9-21, 56-57, Column 15, lines 30-38];

(e) in conjunction with work progress of said plurality of work machines, said work machine information being detected by said work machine information detection means provided in said plurality of work machines, and the work machine information so detected being transmitted to said at least one leader work machine **(each of the forklifts 31 is further provided with a transmitter 33 or other communications system for transmitting the acquired data from the data acquisition device 32 to the remote analysis system 50 for analysis)** through said first communication means [Column 7, lines 5-8, 14-27, 38-39];

(f) said at least one main work machine transmitting said transmitted work machine information to said server apparatus **(remote analysis system 50)** through said second communication means **(each of the forklifts 31 is further provided with a transmitter 33 or other communications system for transmitting the acquired**

data from the data acquisition device 32 to the remote analysis system 50 for analysis) [Column 7, lines 5-8, 14-27, 38-39];

(g) said server apparatus **(remote analysis system 50)** producing said management information **(automatically generate maintenance and warranty reports in response to received information regarding assets 31; automatically generate and analyze management reports relating to the procurement and utilization of a plurality of the forklifts 31)** based on said transmitted work machine information and on said data stored in said database **(real-time and historical information; determine that further preventative maintenance is required)**, and transmitting the management information so produced to said at least one main work machine through said second communication means **(all of the reports generated are automatically delivered through the Internet 40)** [Column 6, lines 60-63, Column 15, lines 30-41]; and

(h) said at least one main work machine transmitting work instructions to other work machines of said plurality of work machines **(management report can advise the person or entity that owns or operates the asset 31; carrying out said work order to maintain the asset)** through said first communication means **{As seen in Figure 3, reports would be transmitted via Internet 40 and model 37 to local controller 36 and receiver 35, which is further connected to forklifts 31 (i.e., work machine) via wireless communications system 34 (i.e., first communication means); forklifts 31 are connected to a plurality of other forklifts via the wireless communications system 34 and receiver 35; thus, reports are transmitted**

between work machines via the wireless communications system 34}, based on said transmitted management information [Column 11, lines 42-44; Claim 9].

Furthermore, it was known at the time of the invention that merely providing an automated way to replace a well-known activity which accomplishes the same result is not sufficient to distinguish over the prior art. *In re Venner*, 262 F.2d 91, 95, 120 USPQ 193, 194 (CCPA 1958). Furthermore, it is well settled that it is not "invention" to broadly provide a mechanical or automatic means to replace manual activity which has accomplished the same result. In re Venner, 120 USPQ 192.

Although Melby et al. discloses the use of two-way access to the real-time and historical information stored in analysis controller database 78 as well as the ability to communicate with supplier 88, maintenance 86, and business 90, Melby et al. does not explicitly teach the step of direct reciprocal communication between a plurality of work machines.

However, Gudat et al. teaches a method for real-time monitoring and coordination of multiple geography altering machines on a work site, where each machine is further equipped to transmit its position signals to the other machine, and to receive the other machine position signals [Column 3, lines 62-64].

Both Melby et al. and Gudat et al. are directed towards tracking and managing work machines at a site. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the teachings of Melby et al. to include the step of including direct reciprocal communications between a plurality of work machines, because doing so streamlines the communication process by allowing real-time monitoring and coordination, which is a goal of Gudat et al. [abstract].

Neither Melby et al. nor Gudat et al. explicitly teaches the step of transmitting information only to a leader work machine.

However, Official Notice is taken that it is old and well known in the art to distribute information only to leaders, who, in turn propagate said distributed information to subordinates as necessary. Thus, the Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time of invention to modify the Melby-Gudat combination to include the step of transmitting information only to a leader work machine, because doing so would avoid, reduce, or eliminate undesirable overlap between machine operations, further enhancing the ability of Melby et al. to track and manage physical assets such as work machines. Further, the adoption of information distribution described above, in which information is distributed only to leaders, who further distribute said information to their subordinates, would have yielded no more than the predictable outcome which one of ordinary skill would have expected to achieve, i.e., the ability to distribute orders/instructions based on an information

distribution hierarchy. It would have been recognized that applying the above-described technique of information distribution would have yielded predictable results because the level of ordinary skill in the art demonstrated by the references applied shows the ability to receive instructions from a central command station, and would have resulted in an improved system that allows the flow of information between machines to parallel the flow of information between the human operators of said machines to perform the work orders/instructions/commands received from leaders.

As per claim 34, neither Melby et al. nor Gudat et al. explicitly teaches the work machine management system according to claim 33, wherein said at least one leader work machine includes a display device, and wherein said management information transmitted from said server apparatus to said at least one leader work machine is displayed on the display device.

However, it has been admitted as prior art, as a result of improperly and/or untimely challenged Official Notice, that displaying information is old and well known in the art. Melby et al. provides for work order 166 to be transmitted electronically to a handheld device 168 associated with specific maintenance personnel assigned to carry out the maintenance [Column 17, lines 21-30]. Melby teaches the generation of an electronic management report, which is delivered through the Internet 40. Melby discloses that the management report can advise the person or entity that owns or operates the asset. Melby also cites the benefit of analyzing relevant information to

anticipate problems before they affect asset utilization [Column 12, lines 8-15]. Thus, the Examiner asserts that the management report contains written instructions or data that require some sort of display mechanism to be viewed and subsequently executed to avoid anticipated problems that would affect asset utilization; thus, it would have been obvious to one of ordinary skill in the art to modify the Melby-Gudat combination to display management information transmitted form a server apparatus, because doing so would enable the owner or operator of said asset to proactively take measures to avoid problems that affect asset utilization, thereby increasing the availability of work machines required to perform scheduled work.

As per claim 35, neither Melby et al. nor Gudat et al. explicitly teaches the work machine management system according to claim 33, wherein said prescribed work comprises a plurality of work processes; and said at least one leader work machine is determined for each of those work processes.

However, it has been admitted as prior art, as a result of improperly and/or untimely challenged Official Notice, that it is old and well known in the art for work plans to comprise a plurality of tasks. It has also been admitted as prior art, as a result of improperly and/or untimely challenged Official Notice, that it is old and well known in the art to assign resources to scheduled tasks. Melby et al. is directed towards actively managing the operation of assets (machines); thus assigning resources to each of the scheduled tasks comprising a work plan would enable a user to ensure that adequate

resources are available to perform all the scheduled work comprising a work plan. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the Melby-Gudat combination to assign work machines to each of a plurality of work processes comprising a scheduled work plan, because doing so would allow the Melby-Gudat combination to effectively manage and allocate resources to meet the demand necessitated by work orders. Maximizing productivity and reducing operating costs and administrative burdens is a goal of Melby et al. [Column 2, lines 45-46].

As per claim 36, Melby et al. teaches the work machine management system according to claim 33, wherein said management information produced by said server apparatus and transmitted to said at least one leader work machine is information relating to maintenance that should be performed on any of said plurality of work machines **(Once it is determined that maintenance of some type is required based on an analysis of the operational status of asset 31, a maintenance report is generated and made available electronically by the Internet)** [Column 16, lines 26-30].

As per claim 37, Melby et al. teaches the work machine management system according to claim 33, wherein said management information produced by said server apparatus and transmitted to said at least one main work machine is information relating

to a trouble that has occurred in any of said plurality of work machines **(fault code may be generated based on the actions of the asset operator)** [Column 16, lines 6-7].

As per claim 38, Melby et al. teaches a work machine management system for work machines that perform prescribed work by operation of a plurality of work machines in accordance with a scheduled work plan, comprising:

(a) a plurality of work machines, said plurality of work machines respectively including a first communication means facilitating reciprocal communications directly between said plurality of work machines [**see discussion of claim 33(a) above**];

(b) a server apparatus, wherein only at least one leader work machine only of said plurality of work machines and said server apparatus including a second communication means facilitating reciprocal communications between said server apparatus and said at least one leader work machine of said plurality of work machines [**see discussion of claim 33(b) above**];

(c) each of said plurality of work machines being provided with work machine information detection means for detecting work machine information [**see discussion of claim 33(c) above**];

(d) a database **(analysis controller database 78)** storing data for managing said plurality of work machines **(real-time and historical information; maintenance information performed {step 82})**, and scheduled work plan production means for producing a scheduled work plan **(work order 166 is generated based on approved preventative maintenance)** based on said work machine information data and on said

data stored in said database, provided at said server apparatus [Column 12, lines 18-19, 56-57, Column 17, lines 1-6];

(e) in conjunction with work progress of said plurality of work machines, said work machine information being detected by said work machine information detection means provided in said plurality of work machines, and the work machine information so detected being transmitted to said at least one main work machine or machines through said first communication means [**see discussion of claim 33(e) above**];

(f) said at least one leader work machine transmitting said transmitted work machine information to said server apparatus through said second communication means [**see discussion of claim 33(f) above**];

(g) said server apparatus automatically produces a scheduled work plan **(work order 166)**, based on said transmitted work machine information and on said data stored in said database **(Based upon the updated information contained in the record of the asset 11, the analysis controller 13 is programmed to perform a fourth step 24 of the prior art method 20, wherein it was determined whether a sufficient period of time or usage had elapsed as to trigger the performance of periodic routine maintenance for that asset 11. Typically, such determination was made by determining the amount of the elapsed time or usage of the asset 11 (by comparing the most recent indication of the date or amount of usage of the asset 11 with the previous date or amount of usage contained in the record stored in the analysis controller 13), and by comparing such elapsed time or amount of usage with a predetermined standard (also contained in the record of the asset 11**

stored in the analysis controller 13). If it was determined that a sufficient amount of elapsed time or amount of usage had occurred, the method 20 branched from the step 24 to a step 25, wherein a hard copy maintenance report was generated by the output device 15; Regardless of whether a sufficient amount of elapsed time or amount of usage had occurred, management reports are generated; work order 166 is generated based on approved preventative maintenance and includes all of the critical operating data required to effectively schedule and carry out the maintenance, including hour meter reading, any fault codes, asset identification criteria, operator of record, contact information and asset location. Moreover, based on information contained within the fault code or retrieved from the knowledgebase, information concerning anticipated parts may also be provided as well as the nearest location from where they may be retrieved. Finally, the work order 166 preferably contains the past recent history of the particular asset 31 so that the mechanic can use this information to expedite maintenance; In response to such information [information received associated with each of the assets], the remote analysis system automatically analyzes the newly provided information and schedules maintenance as required; First, by providing the assets with the data acquisition devices 32 and the communications system 33 and 34, the operational characteristics and other information regarding the assets 31 is automatically sensed and transmitted to the analysis controller 51 on a real time basis, without requiring human intervention or assistance. Second, the analysis controller 51 is programmed to

analyze such information as it is received and to automatically generate maintenance and warranty reports in response thereto), and transmitting that scheduled work plan so produced to said at least one leader work machine through said second communication means **(work order 166 is sent electronically to appropriate maintenance personnel that contains all of the critical operating data required to effectively schedule and carry out the maintenance)** [Column 5, lines 43-59, Column 6, lines 1-13, Column 15, lines 30-38, Column 17 lines 1-20, abstract]; and

(h) only said at least one leader work machine transmitting said work instructions to other work machines of said plurality of work machines through said first communication means, based on said transmitted scheduled work plan [**see discussion of claim 33(h) above**].

Furthermore, it was known at the time of the invention that merely providing an automated way to replace a well-known activity which accomplishes the same result is not sufficient to distinguish over the prior art. *In re Venner*, 262 F.2d 91, 95, 120 USPQ 193, 194 (CCPA 1958). Furthermore, it is well settled that it is not "invention" to broadly provide a mechanical or automatic means to replace manual activity which has accomplished the same result. In re Venner, 120 USPQ 192.

As per claim 39, neither Melby et al. nor Gudat et al. explicitly teaches the work machine management system according to claim 38, wherein said at least one leader work machine includes a display device, and wherein said scheduled work plan

transmitted from said server apparatus to said at least one leader work machine is displayed on the display device.

However, it has been admitted as prior art, as a result of improperly and/or untimely challenged Official Notice, that displaying information is old and well known in the art. Melby et al. provides for work order 166 to be transmitted electronically to a handheld device 168 associated with specific maintenance personnel assigned to carry out the maintenance [Column 17, lines 21-30]. Melby teaches the generation of an electronic management report, which is delivered through the Internet 40. Melby discloses that the management report can advise the person or entity that owns or operates the asset. Melby also cites the benefit of analyzing relevant information to anticipate problems before they affect asset utilization [Column 12, lines 8-15]. Thus, the Examiner asserts that the management report contains written instructions or data that require some sort of display mechanism to be viewed and subsequently executed to avoid anticipated problems that would affect asset utilization; thus, it would have been obvious to one of ordinary skill in the art to modify the Melby-Gudat combination to display management information transmitted form a server apparatus, because doing so would enable the owner or operator of said asset to proactively take measures to avoid problems that affect asset utilization, thereby increasing the availability of work machines required to perform work. Maximizing productivity and reducing operating costs and administrative burdens is a goal of Melby et al. [Column 8, lines 60-65].

As per claim 40, neither Melby et al. nor Gudat et al. explicitly teaches the work machine management system according to claim 38, wherein said scheduled work plan comprises a plurality of work processes; and said at least one main work machine is determined for each of those work processes.

However, it has been admitted as prior art, as a result of improperly and/or untimely challenged Official Notice, that it is old and well known in the art for work plans to comprise a plurality of tasks. It has also been admitted as prior art, as a result of improperly and/or untimely challenged Official Notice, that it is old and well known in the art to assign resources to scheduled tasks. Melby et al. is directed towards actively managing the operation of assets (machines); thus assigning resources to each of the scheduled tasks comprising a work plan would enable a user to ensure that adequate resources are available to perform all the scheduled work comprising a work plan. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the Melby-Gudat combination to assign work machines to each of a plurality of work processes comprising a scheduled work plan, because doing so would allow Melby et al. to effectively manage and allocate resources to meet the demand necessitated by work orders. Maximizing productivity and reducing operating costs and administrative burdens is a goal of Melby et al. [Column 2, lines 45-46].

As per claim 41, Melby et al. teaches the work machine management system according to claim 38, wherein said server apparatus transmits information relating to

maintenance that should be done to any of said plurality of work machines **(Once it is determined that maintenance of some type is required based on an analysis of the operational status of asset 31, a maintenance report is generated and made available electronically by the Internet)** [Column 16, lines 26-30], and said server apparatus transmits a revised scheduled work plan produced by revising the scheduled work plan in conjunction with the performance of maintenance **(work order 166 is sent electronically to appropriate maintenance personnel that contains all of the critical operating data required to effectively schedule and carry out the maintenance)**, to said at least one leader work machine [Column 17, lines 5-9].

As per claim 42, Melby et al. teaches the work machine management system according to claim 38, further comprising:

(a) a terminal apparatus **(handheld device 168)** provided on an end where maintenance is done on said plurality of work machines, said terminal apparatus being connected to said second communication means **(handheld device 168 is in real-time two way communication with analysis controller database 78)** [Column 17, lines 25-27];

(b) wherein said server apparatus transmits information relating to maintenance that should be done to any of said plurality of work machines, and transmits a revised scheduled work plan produced by revising the scheduled work plan in conjunction with the performance of maintenance, to said at least one leader work machine **(work order 166 is transmitted electronically to a handheld device 168**

associated with specific maintenance personnel assigned to carry out the maintenance) [Column 17, lines 5-9, 21-27]; and

(c) wherein said at least one leader work machine transmits instructions for performing maintenance, based on the transmitted information relating to maintenance **(information concerning anticipated parts and the nearest location from where they may be retrieved based on information contained within the fault code or retrieved from the knowledgebase)**, to said terminal apparatus through said second communication means, and transmits work instructions to other work machines of said plurality of work machines through said first communication means based on said revised scheduled work plan [Column 17, lines 12-16].

As per claim 43, Melby et al. teaches the work machine management system according to claim 38, wherein said server apparatus transmits information relating to trouble that has arisen in said plurality of work machines **(fault codes)**, and a revised scheduled work plan produced by revising the scheduled work plan responsive to the troubles **(work order 166 is sent electronically to appropriate maintenance personnel that contains all of the critical operating data required to effectively schedule and carry out the maintenance)**, to said main at least one leader work machine [Column 17 lines 5-9].

As per claim 44, Melby et al. teaches the work machine management system according to claim 38, further comprising:

(a) a trouble correction terminal apparatus **(handheld device 168)** provided on the end where trouble with said plurality of work machines is corrected, the trouble correction terminal being connected to said second communication means **(handheld device 168 is in real-time two way communication with analysis controller database 78)** [Column 17, lines 25-27];

(b) wherein said server apparatus transmits information relating to the trouble **(fault code)**, and a revised scheduled work plan produced by revising the scheduled work plan responsive to the trouble, to said at least one leader work machine **(work order 166 is transmitted electronically to a handheld device 168 associated with specific maintenance personnel assigned to carry out the maintenance; work order 166 is sent electronically to appropriate maintenance personnel that contains all of the critical operating data required to effectively schedule and carry out the maintenance)** [Column 17, lines 5-9, 21-27]; and

(c) wherein said at least one leader work machine transmits instructions for correcting the trouble, based on the information relating to the trouble **(information concerning anticipated parts and the nearest location from where they may be retrieved based on information contained within the fault code or retrieved from the knowledgebase)**, to said trouble correction terminal apparatus through said second communication means, and transmits work instructions to other work machines of said plurality of work machines through said first communication means in accordance with said revised scheduled work plan [Column 17, lines 12-16].

As per claim 45, Melby et al. teaches the work machine management system according to claim 38, wherein said server apparatus stores in memory a schedule and performance results data indicating a relationship between a scheduled work plan previously produced and an actual work performance result as performed in accordance with said scheduled work plan **(determine whether a predetermined period of time has elapsed in order to generate a periodic management report covering some or all of the assets being tracked; real-time and historical information; maintenance information performed {step 82}; determine whether scheduled maintenance has been performed, and determining the party responsible for certain maintenance activities; information regarding maintenance performed is stored in database 78)**, and said server apparatus produces a new scheduled work plan responsive to said schedule and said performance results data [Column 11, lines 64-66, Column 12, lines 18-19, 56-57].

As per claim 46, Melby et al. teaches a scheduled work plan production apparatus that, in cases where a scheduled work plan is produced according to work request data indicating particulars of work requested by an ordering party, and work is caused to be done, using a plurality of work machines, based on said produced scheduled work plan, produces said scheduled work plan, comprising:

(a) a plurality of work machines **(assets 11 – a plurality of pieces of movable industrial equipment; forklifts 32)** [Column 3, lines 55-57], said plurality of work machines respectively including its first communication means facilitating

reciprocal communications **(each of the forklifts 31 is further provided with a transmitter 33 or other communications system for transmitting the acquired data from the data acquisition device 32 to the remote analysis system 50 for analysis)** between said plurality of work machines facilitating reciprocal communications **(transmitter 33 is preferably embodied as a wireless communications system, such as represented by an antenna 34; the transmitters 33 and the wireless communications systems 34 can be embodied as conventional radio frequency transmitters provided on each of the forklifts 31 that transmit electromagnetic signals; wireless communications systems 34 are adapted to transmit signals that are representative of the sense operating conditions of the forklifts 31 through space to a receiver 35; the data acquisition units 32 and the receivers 35 are in bi-directional communication with one another)** [Column 7, lines 5-8, 14-27, 38-39];

(b) a server apparatus **(remote analysis system 50)** [Column 7, lines 8 , Figure 3];

(c) a database **(analysis controller database 78)** for storing schedule and performance results data indicating a relationship between a scheduled work plan previously produced and an actual work performance result as performed on basis of a scheduled work plan **(determine whether a predetermined period of time has elapsed in order to generate a periodic management report covering some or all of the assets being tracked; real-time and historical information; maintenance information performed {step 82}; determine whether scheduled maintenance has**

been performed, and determining the party responsible for certain maintenance activities) the data base being provided **(information regarding maintenance performed is stored in database 78)** at said server apparatus **(remote analysis system 50 {which is also connected to an electronic communications network})** [Column 11, lines 64-66, Column 12, lines 18-19, 56-57]

(d) wherein a terminal apparatus **(handheld device 168)** on an end of an ordering party; said server apparatus and only at least one leader work machine of said plurality of work machines, which are connected by a communication means facilitating reciprocal communications **(handheld device 168 is in real-time two way communication with analysis controller database 78)** only among said terminal apparatus of said ordering machine, said server apparatus, and at least one leader work machine of said plurality of work machines [Column 17, lines 25-27];

(e) wherein said work request data are input from said terminal apparatus on said ordering party end through said second communication means **(handheld device 168 is in real-time two way communication with analysis controller database, thus, dealer billing systems, inventory listings, customer work order approval records, fleet management information can be accessed by handheld device 168; handheld device 168 is used to update database 78 including labor information and an identification of any parts required to effect a repair)** [Column 17, lines 24-30, 35-38];

(f) wherein said server apparatus automatically produces a scheduled work plan **(work order 166)** based on input work request data and on a schedule and

performance results data stored in said database, and said server apparatus transmits said scheduled work plan to said at least one leader work machine only through said second communication means **(work order 166 is generated based on approved preventative maintenance and includes all of the critical operating data required to effectively schedule and carry out the maintenance, including hour meter reading, any fault codes, asset identification criteria, operator of record, contact information and asset location. Moreover, based on information contained within the fault code or retrieved from the knowledgebase, information concerning anticipated parts may also be provided as well as the nearest location from where they may be retrieved. Finally, the work order 166 preferably contains the past recent history of the particular asset 31 so that the mechanic can use this information to expedite maintenance; In response to such information [information received associated with each of the assets], the remote analysis system automatically analyzes the newly provided information and schedules maintenance as required; First, by providing the assets with the data acquisition devices 32 and the communications system 33 and 34, the operational characteristics and other information regarding the assets 31 is automatically sensed and transmitted to the analysis controller 51 on a real time basis, without requiring human intervention or assistance. Second, the analysis controller 51 is programmed to analyze such information as it is received and to automatically generate maintenance and warranty reports in response thereto; work order 166 is sent electronically to appropriate maintenance personnel that contains all of**

the critical operating data required to effectively schedule and carry out the maintenance; remote analysis system 50 automatically updates individual records associated with each of the assets with information {such as fault codes, maintenance problems, when routine maintenance is required} received from the Internet), and updates said schedule and performance results data in said database **(The remote analysis system automatically updates individuals associated with each of the assets with the information received… Information associated with the maintenance is also recorded electronically to maximize efficiency, provide historical trends, automate billing, and control inventory levels)** [abstract, Column 2, lines 55-57, Column 15, lines 30-38, Column 17, lines 1-20];

(g) said at least one leader work machine giving work instructions to said plurality of work machines through said first communication means based on said scheduled work plan **(work order 166)** transmitted from said server apparatus, and said plurality of work machines transmitting actual work performance result as performed on a basis of said scheduled work plan to said server apparatus through said communication means **(carrying out said work order to maintain the asset)** [Claim 9]; and

(f) wherein said server apparatus **(remote analysis system 50)** updates said database **(analysis controller database 78**) with said actual work performance result **(remote analysis system 50 automatically updates individual records associated with each of the assets with information {such as fault codes, maintenance**

problems, when routine maintenance is required} received from the Internet) [Column 2, lines 55-57].

Furthermore, it was known at the time of the invention that merely providing an automated way to replace a well-known activity which accomplishes the same result is not sufficient to distinguish over the prior art. *In re Venner*, 262 F.2d 91, 95, 120 USPQ 193, 194 (CCPA 1958). Furthermore, it is well settled that it is not "invention" to broadly provide a mechanical or automatic means to replace manual activity which has accomplished the same result. In re Venner, 120 USPQ 192.

Although Melby et al. discloses the use of two-way access to the real-time and historical information stored in analysis controller database 78 as well as the ability to communicate with supplier 88, maintenance 86, and business 90, Melby et al. does not explicitly teach the step of direct reciprocal communication between a plurality of work machines.

However, Gudat et al. teaches a method for real-time monitoring and coordination of multiple geography altering machines on a work site, where each machine is further equipped to transmit its position signals to the other machine, and to receive the other machine position signals [Column 3, lines 62-64].

Both Melby et al. and Gudat et al. are directed towards tracking and managing work machines at a site. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the teachings of Melby et al. to include the step of including direct reciprocal communications between a plurality of work machines, because doing so streamlines the communication process by allowing real-time monitoring and coordination, which is a goal of Gudat et al. [abstract].

As per claim 47, Melby et al. teaches the scheduled work plan production apparatus according to claim 46, wherein:

(a) when revision data for revising scheduled work plan are provided, said server apparatus revises the scheduled work plan based on those revision data, said work request data, and said schedule and said performance results data **(handheld device 168 is used to update database 78, including labor information and an identification of any parts required to effect a repair)**, to produce a revised scheduled work plan, and said server apparatus transmits said revised scheduled work plan to said at least one leader machine of said plurality of work machines through said communication means **(handheld device 168 is in real-time two way communication with analysis controller database)** [Column 2, lines 55-57, Column 17, lines 24-27, 35-38]; and

(b) said plurality of work machines performing work based on the revised scheduled work plan **(carrying out said work order to maintain the asset)**, and said plurality of work machines transmitting the actual work performance results on a basis

of said schedule work plan to said server apparatus by said communication means **(remote analysis system 50 automatically updates individual records associated with each of the assets with information {such as fault codes, maintenance problems, when routine maintenance is required} received from the Internet)** [Column 2, lines 55-57; Claim 9].

As per claim 48, Melby et al. teaches a scheduled work plan production apparatus that, in cases where a scheduled work plan is produced according to work request data indicating particulars of work requested by an ordering party, a plurality of work machines is obtained, and work is caused to be done using said plurality of work machines so obtained, based on said produced scheduled work plan, produces said scheduled work plan, comprising:

(a) a server apparatus **(remote analysis system 50)** [Column 7, lines 8 , Figure 3];

(b) a database for storing a schedule and performance results data indicating a relationship between a scheduled work plan previously produced and actual work performance results as performed on basis of said scheduled work plan at the server apparatus [**see analysis of claim 46(c) above**];

(c) a plurality of work machines, said plurality of the work machines respectively including a first communication means facilitating reciprocal communications directly between said plurality of work machines [**see analysis of claim 46(a) above**];

(e) a terminal apparatus on said ordering party end, wherein said terminal apparatus, said server apparatus, only at least one leader work machine of said plurality of work machines, and are connected by a second communication means configured to facilitate reciprocal communications only among said terminal apparatus, said server apparatus, said at least one leader work machine of said plurality of work machines, and said rental/production and terminal apparatus [**see analysis of claim 46(d) above**];

(f) wherein said work request data are input from said terminal apparatus to said server apparatus through said second communication means [**see analysis of claim 46(e) above**];

(g) wherein said server apparatus automatically facilitates producing a scheduled work plan responsive to the work request data and to the schedule and the performance results data, transmitting said scheduled work plan to said at least one leader work machine and to said rental/production end terminal apparatus through said second communication means, and updating the schedule and the performance results data in said database [**see analysis of claim 46(f) above**];

(h) said at least one leader work machines giving work instructions to said plurality of work machines through said first communication means based on the scheduled work plan from said server apparatus, and transmitting actual work performance results as performed on basis of said scheduled work plan to said server apparatus by said second communication means [**see analysis of claim 46(g) above**];

(i) wherein said server apparatus updates said database with the actual work performance results [**see analysis of claim 46(h) above**].

Furthermore, it was known at the time of the invention that merely providing an automated way to replace a well-known activity which accomplishes the same result is not sufficient to distinguish over the prior art. *In re Venner*, 262 F.2d 91, 95, 120 USPQ 193, 194 (CCPA 1958). Furthermore, it is well settled that it is not "invention" to broadly provide a mechanical or automatic means to replace manual activity which has accomplished the same result. In re Venner, 120 USPQ 192.

Melby et al. does not explicitly teach the inclusion of a rental/production end terminal apparatus on a communication means. However, it has been admitted as prior art, as a result of improperly and/or untimely challenged Official Notice, that connecting data terminals to an electronic communications network, such as the Internet, is a step that is old and well known in the art. Furthermore, the step of connecting an additional terminal apparatus to the electronic communications network taught by Melby et al. can be performed in a similar fashion to the ordering party terminal, meeting the limitation of the claim.

Neither Melby et al. nor Gudat et al. explicitly teaches:

(d) a rental/production end terminal apparatus for renting or producing said work machine, said rental/production end terminal apparatus being provided on the ends where rental/production is performed; and

(j) wherein said rental/production end terminal apparatus plans rental or production based on said scheduled work plan from said server apparatus.

However, handheld device 168 of Melby et al. is in real-time two way communication with analysis controller database 78 and is enabled to update said database regarding required and scheduled maintenance. The system is further enabled to automatically order replacement parts. The need to rent or produce additional work machines may be based on information entered by the handheld device. Further, the system can be enabled to automatically order replacement/additional machines, in a fashion similar to ordering replacement parts. Said orders are propagated throughout the analysis system 50. The system provides for automatic generation of reports for required maintenance work, and can be enabled to generate order reports for required additional/replacement work machines. Therefore, handheld device 168 is capable of facilitating such actions, meeting the limitations of the claim.

Furthermore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the Melby-Gudat combination to include a terminal for renting/producing work machines because the resulting invention would enable the system to obtain additional resources, as needed, to provide an adequate number of work machines to perform prescribed work without suffering costly delays (time and financial, as resulting from a decreased number of available work machines, delaying the completion of said prescribed work).

As per claim 49, neither Melby et al. nor Gudat et al. explicitly teaches the work machine management system according to claim 33, further comprising:

(a) an information display for displaying information outside of a work site where said plurality of work machines are operating is provided in one or more of said plurality of work machines;

(b) wherein said server apparatus produces information relating to said work site, based on the work machine information, and on the data stored in said database, and transmits said information relating to said work site to said leader work machine through said second communication means; and

(c) said at least one leader work machine displays said information relating to said work site on said information display.

However, it has been admitted as prior art, as a result of improperly/untimely challenged Official notice that it is old and well known in the arts to notify relevant parties of the status and availability (or unavailability) of work machines at a site. Melby et al. collects a plurality of data on the usage of work machines to determine whether the responsibility for the maintenance being performed on the asset should rest with the manufacturer, supplier, owner or user of the asset [Column 9, lines 38-44] and also to analyze a knowledgebase of relevant information to analyze appropriate trends [Column 12, lines 9-21], such as those pertaining to the need for preventative maintenance. Therefore, it would have been obvious to one of ordinary skill in the art at the time of

invention to modify the Melby-Gudat combination to include an information display at a work site so that appropriate personnel can be notified of a need to procure replacement work machines, obtain a work order, or to reconfigure a work schedule to compensate for the status of a work machine on which a main work machine is dependent on to perform work.

As per claim 50, Melby et al. teaches the work machine management system according to claim 49, wherein:

(a) said information display is deployed on a work machine other than said one leader work machine **(handheld device 168)**; and

(b) said at least one leader work machine transmits transmitted information relating to said work site to another work machine through said first communication means **(each of the forklifts 31 is further provided with a transmitter 33 or other communications system for transmitting the acquired data from the data acquisition device 32 to the remote analysis system 50 for analysis)** and causes said information to be displayed on said information display deployed on said other work machine **(handheld device 168 is in real-time two way communication with analysis controller database, thus, dealer billing systems, inventory listings, customer work order approval records, fleet management information can be accessed by handheld device 168; handheld device 168 is used to update database 78 including labor information and an identification of any parts required to effect a repair)** [Column 7, lines 5-8, 14-27, 38-39].

As per claim 51, Melby et al. teaches the work machine management system according to claim 33, further comprising:

(a) an information display for displaying information outside of a work site where said plurality of work machines are operating, installed in the periphery of said work site **(receiver 35 that is provided at a fixed location within the environment in which they are operated; receiver 35 may be provided on movable structures that move about the environment to receive the information transmitted thereon)** [Column 7, lines 24-37];

(b) wherein said server apparatus produces information relating to said work site, based on said work machine information and on the data stored in said database, and transmits said information relating to said work site to said one leader work machine through said second communications means [**see analysis of claim 33(g) above**];

(c) wherein said at least one leader work machine **(local controller 36)** displays said information relating to said work site on said information display **(receiver 35 confirms the accuracy and completeness of information transmitted by data acquisition unit 32; local controller 36 is connected to receiver 35)** [Column 7, lines 38-53 and 62].

As per claim 52, Melby et al. teaches the work machine management system according to claim 51, wherein said one leader work machine causes the information

relating to said work site to be displayed on said information display installed in the periphery of said work site via said first communication means **(wireless communications system 34 is adapted to transmit signals that are representative of the sensed operating conditions of the forklifts 31 to a receiver 35 that is provided at a fixed location within the environment in which they are operated)** [Column 7, lines 24-37].

As per claim 53, Melby et al. teaches the work machine management system according to claim 33, further comprising:

(a) an information display for providing information outside of a work site where said plurality of work machines are operating, installed in the periphery of said work site **(wireless communications system 34 is adapted to transmit signals that are representative of the sensed operating conditions of the forklifts 31 to a receiver 35 that is provided at a fixed location within the environment in which they are operated)** [Column 7, lines 24-37]; and

(b) wherein said server apparatus **(remote analysis system 50)** produces information relating to said work site, **(automatically generate maintenance and warranty reports in response to received information regarding assets 31; automatically generate and analyze management reports relating to the procurement and utilization of a plurality of the forklifts 31)** based on work machine information that has been transmitted and on said data stored in said database **(real-time and historical information; determine that further preventative maintenance**

is required), transmits said information relating to said work site to said information display through said second communication means, and causes said information relating to said work site to be displayed on said information display **(receiver 35 that is provided at a fixed location within the environment in which they are operated; receiver 35 may be provided on movable structures that move about the environment to receive the information transmitted thereon)** [Column 7, lines 24-37].

As per claim 54, Melby et al. teaches a work machine management system of work machines according to claim 33, further comprising:

(a) environmental condition measurement means **(data acquisition device 32)** for measuring environmental conditions **(any desired operating conditions of the forklift 31 that might be considered important in making effective management decisions regarding the operation of the forklift 31; distances traveled)** in a periphery of a work site, provided in the periphery of said work site [Column 6, lines 48-63];

(b) at least one an information display for displaying information outside of a work site, being arranged in at least one of the periphery of said work site, and said at least one leader machine **(wireless communications system 34 is adapted to transmit signals that are representative of the sensed operating conditions of the forklifts 31 to a receiver 35 that is provided at a fixed location within the environment in which they are operated; receiver 35 may be provided on movable**

structures that move about the environment to receive the information transmitted thereon) [Column 7, lines 24-37];

(c) said second communication means connecting said environmental condition measurement means with a server apparatus **(each of the forklifts 31 is further provided with a transmitter 33 or other communications system for transmitting the acquired data from the data acquisition device 32 to the remote analysis system 50 for analysis)** [Column 7, lines 5-8, 14-27, 38-39] and connecting said server apparatus with said at least one information display; and

(d) display information production means, provided at a server apparatus producing environmental conditions display information based on measured environmental condition values and on data stored in a database **(receiver 35 that is provided at a fixed location within the environment in which they are operated; receiver 35 may be provided on movable structures that move about the environment to receive the information transmitted thereon** [Column 7, lines 24-37]; wherein

(e) said measured environmental conditions values are measured by said environmental condition measurement means, in conjunction with work progress of said plurality of work machines, and are transmitted from said environmental condition measurement means to said server apparatus through said second communication means **(each of the forklifts 31 is further provided with a transmitter 33 or other communications system for transmitting the acquired data from the data**

acquisition device 32 to the remote analysis system 50 for analysis) [Column 7, lines 5-8, 14-27, 38-39]; and

(f) said server apparatus produces environmental condition display information **(information relating to the operational characteristics of the asset 11 being tracked, or operating conditions of the forklift 31 that might be considered important in making effective management decisions regarding the operation of forklift 31)**, based on measured environmental conditions values **{data provided by transmitter 33}** and on data stored in said database **(analysis controller database 78)**, said server apparatus transmits said environmental condition display information to said information display through said second communication means **(receiver 35 that is provided at a fixed location within the environment in which they are operated; receiver 35 may be provided on movable structures that move about the environment to receive the information transmitted thereon; receiver 35 is connected to local controller 36, which is connected to remote analysis system 50 by conventional modem 37 or electronic communications network, such as the Internet)**, and said server apparatus causes said environmental condition display information to be displayed on said information display [Column 4, lines 34-44, Column 6, lines 52-63, Column 7, lines 24-37, 61-62, Column 8, lines 23-30].

Neither Melby et al. nor Gudat et al. explicitly teaches the measurement of environmental conditions including noise levels and toxic chemical concentrations. However, it has been admitted as prior art, as a result of improperly and/or untimely

challenged Official Notice, that it is old and well known in the art to collect data regarding environmental conditions, and further that local, federal and international ordinances, regulations, and laws govern acceptable noise levels and toxic chemical concentration limits for areas in which work is performed. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the teachings of the Melby-Gudat combination to measure noise levels and toxic chemical concentrations, because doing so would allow the Melby-Gudat combination to perform work orders while simultaneously being in compliance with local, federal and international ordinances, regulations, and laws governing the noise, pollution, and toxic levels of the performed work, thereby avoiding costly fines and maintaining public safety, and minimizing the inconvenience to surrounding parties.

As per claim 55, Melby et al. teaches the work machine management system according to claim 33, wherein data on performance results for work performed by said plurality of work machines are stored in said database **(analysis controller database 78)** in said server apparatus for each of said plurality of work machines **(real-time and historical information; maintenance information performed {step 82})**, and when data requesting production of a work report relating to a specific work machine are transmitted from said at least one leader work machine to said server apparatus **(local controller 36 that is adapted to receive and store data from each of the receivers 35 and to periodically transmit gathered and stored information regarding the individual operating characteristics to the remote analysis system 50 for analysis)**

through said second communication means **(modem 52 or similar communications device; conventional modem 37 or other communications device; electronic communications network, such as the internet 40)**, said server apparatus reads out work performance results data corresponding to said specific work machine from data recorded in said database, said server apparatus produces a work report indicating particulars of work performed in a certain time period by said specific work machine **(management reports relating to the procurement and utilization of a plurality of the forklifts 31)**, and said server apparatus transmits said work report so produced to said at least one leader work machine by said second communication means, and said at least one leader work machine manages said plurality of work machines based on said work report **(management report can advise the person or entity that owns or operates the asset 31; carrying out said work order to maintain the asset)** [Column 7, lines 62-67, Column 8, lines 23-30, 48-52, Column 11, lines 42-44, Column 12, lines 18-19, 56-57; Claim 9].

As per claim 56, Melby et al. teaches the work machine management system according to claim 55, wherein:

(a) a terminal apparatus for labor management **(handheld device 168)** is provided on the end where labor management is performed for persons on board said plurality of construction machines **(handheld device 168 is associated with specific maintenance personnel assigned to carry out the maintenance)** and

(b) wherein said at least one leader work machine is connected by said second communication means facilitating reciprocal communications therebetween **(handheld device 168 is in real-time two way communication with analysis controller database 78)** [Column 17, lines 25-27];

(c) wherein said at least one leader work machine transmits said work report to said terminal apparatus for labor management by aid communication means **(work order 166 is transmitted electronically to a handheld device 168 associated with specific maintenance personnel assigned to carry out the maintenance; work order 166 is sent electronically to appropriate maintenance personnel that contains all of the critical operating data required to effectively schedule and carry out the maintenance)** [Column 17, lines 5-9, 21-27]; and

(d) wherein said terminal apparatus for labor management performs labor management for those on board said plurality of construction machines based on said work report so transmitted **(information concerning anticipated parts and the nearest location from where they may be retrieved based on information contained within the fault code or retrieved from the knowledgebase; in response to a fault code, electronic checklist 154 is to be completed by asset operator on a regular basis in accordance with OSHA requirements)** [Column 17, lines 12-16].

As per claim 57, Melby et al. teaches the work machine management system according to claim 33, wherein:

(a) said work machine information is work condition information indicating actual work conditions of a work machine **(operational characteristics of the particular asset 11 being tracked, such as the physical requirements or limitations of the asset (mast height, load capacity, types of tires, for example), the type of fuel used, and the period of time or usage between the performance of periodic maintenance; time duration of use (and non-use), distances traveled, the extent of fork usage, the nature of hydraulic system utilization, and the like)** [Column 4, lines 34-44, Column 6,lines 48-63];

(b) data on schedule of work to be performed by said plurality of work machines **(maintenance invoice)** are stored in a database in said server apparatus **(maintenance organization 86 both receives and provides information to database 78)**, for each of said plurality of work machines [Column 11, line 61 – Column 12, line 4, Column 12, lines 34-36] ;

(c) wherein, when said work condition information is transmitted from said at least one leader work machine to said server apparatus through said second communication means, said server apparatus reads out said work schedule data from data stored in said database, compares said work schedule data and said work condition information, and, when there is a discrepancy, produces anomaly information indicating that an anomaly has occurred in corresponding work machine **(automatically generate maintenance and warranty reports in response to received information regarding assets 31; automatically generate and analyze management reports relating to the procurement and utilization of a plurality of the forklifts 31)**, and

transmits said anomaly information **(Once it is determined that maintenance of some type is required based on an analysis of the operational status of asset 31, a maintenance report is generated and made available electronically by the Internet)** to said at least one leader work machine through said second communication means **(fault code may be generated based on the actions of the asset operator)** [Column 6, lines 60-63, Column 15, lines 30-41, Column 16, lines 6-7, and lines 26-30]; and

(d) wherein said at least one leader work machine manages said plurality of work machines based on said transmitted anomaly information **(management report can advise the person or entity that owns or operates the asset 31; carrying out said work order to maintain the asset)** [Column 11, lines 42-44; Claim 9].

As per claim 58, Melby et al. teaches the work machine management system according to claim 33, wherein:

(a) said work machine information includes position information indicating an actual position of a work machine **(operational characteristics of the particular asset 11 being tracked, such as the physical requirements or limitations of the asset (mast height, load capacity, types of tires, for example), the type of fuel used, and the period of time or usage between the performance of periodic maintenance; time duration of use (and non-use), distances traveled, the extent of fork usage, the nature of hydraulic system utilization, and the like)** [Column 4, lines 34-44, Column 6,lines 48-63];

(b) operating position data reflecting operating positions at which said plurality of work machines operate are stored in the database **(real-time and historical information stored in analysis controller database 78; maintenance information performed {step 82})** [Column 12, lines 18-19, 56-57];

(c) wherein, when said position information is transmitted from said at least one leader work machine to said server apparatus through said second communication means, said server apparatus reads out said operating position data from said data stored in said database, compares said operating position data and said position information, and, when the position information deviates form the operating position data, produces anomaly information indicating that an anomaly has occurred in corresponding work machine **(fault code may be generated based on the actions of the asset operator {such as incorrect/unscheduled operating position} changes in operational parameters associated with asset 31 may result in the generation of a specific fault code)**, and transmits said anomaly information so produced to said at least one leader work machine by said second communication means **{data from data acquisition device 34 is transmitted to local controller 36 for transmission to database 78, and local controller 36 is connected to remote analysis system 50 via the Internet 40; thus database 78 has the ability to communicate with remote analysis system 50 via the Internet 40, as seen in Figure 3}** [Column 15, lines 17-20, 54-62, Column 16, lines 6-7, Column 17, lines 25-27, Figure 3]; and

(d) wherein said at least one leader work machine manages said plurality of work machines based on said transmitted anomaly information **(management report**

can advise the person or entity that owns or operates the asset 31; carrying out said work order to maintain the asset) [Column 11, lines 42-44; Claim 9].

As per claim 59, Melby et al. teaches the work machine management system according to claim 33, wherein:

(a) said work machine information includes attitude information indicating an actual attitude of a work machine **(operational characteristics of the particular asset 11 being tracked, such as the physical requirements or limitations of the asset (mast height, load capacity, types of tires, for example), the type of fuel used, and the period of time or usage between the performance of periodic maintenance; time duration of use (and non-use), distances traveled, the extent of fork usage, the nature of hydraulic system utilization, and the like)** [Column 4, lines 34-44, Column 6,lines 48-63];

(b) attitude limit values for said plurality of work machines are stored in the database in said server apparatus **(real-time and historical information stored in analysis controller database 78; maintenance information performed {step 82})** in said server apparatus [Column 12, lines 18-19, 56-57];

(c) wherein when said attitude information is transmitted from said main at least one leader machine to said server apparatus through said second communication means, said server apparatus reads out said attitude limit values from said data stored in said database, compares said attitude limit values and said attitude information, and, when the attitude information exceeds the attitude limit values, produces anomaly

information indicating that an anomaly has occurred in corresponding work machine **(fault code may be generated based on the actions of the asset operator {such as actual attitude exceeding attitude limit value}; changes in operational parameters associated with asset 31 may result in the generation of a specific fault code)**, and transmits said anomaly information to said main work machine through said second communication means [Column 15, lines 54-62, Column 16, lines 6-7]; and

(d) wherein said main work machine manages said plurality of work machines based on said transmitted anomaly information **(management report can advise the person or entity that owns or operates the asset 31; carrying out said work order to maintain the asset)** [Column 11, lines 42-44; Claim 9].

As per claim 60, Melby et al. teaches the work machine management system according to claims 57, wherein:

(a) an anomaly handling terminal apparatus **(handheld device 168)** is provided on the end where anomaly handing is performed for a construction machine where an anomaly has occurred, and said anomaly handling terminal apparatus and said server apparatus are connected by a third communication means facilitating reciprocal communications therebetween **(handheld device 168 is in real-time two way communication with analysis controller database 78; data from data acquisition device 34 is transmitted to local controller 36 for transmission to database 78, and local controller 36 is connected to remote analysis system 50 via the Internet 40; thus database 78 has the ability to communicate with remote**

analysis system 50 via the Internet 40, as seen in Figure 3) [Column 15, lines 17-20, Column 17, lines 25-27, Figure 3];

(b) wherein said server apparatus, when anomaly information has been produced, transmits said anomaly information **(fault code)** to anomaly handling terminal apparatus through said third communication means **(work order 166 is transmitted electronically to a handheld device 168 associated with specific maintenance personnel assigned to carry out the maintenance; work order 166 is sent electronically to appropriate maintenance personnel that contains all of the critical operating data required to effectively schedule and carry out the maintenance)** [Column 17, lines 5-9, 21-27]; and

(c) wherein said anomaly handling terminal apparatus performs anomaly handling for said construction machine at which said anomaly occurred, based on said anomaly information **(management report can advise the person or entity that owns or operates the asset 31; carrying out said work order to maintain the asset)** [Column 11, lines 42-44; Claim 9].

As per claim 61, Melby et al. teaches the work machine management system according to claim 57, wherein:

(a) an anomaly handling terminal apparatus **(handheld device 168)** is provided on the end where anomaly handling is performed for a construction machine at which an anomaly has occurred, and wherein said anomaly handling terminal apparatus and said at least one leader work machine are corrected by a third communication

means facilitating reciprocal communications therebetween **(handheld device 168 is in real-time two way communication with analysis controller database 78; data from data acquisition device 34 is transmitted to local controller 36 for transmission to database 78, and local controller 36 is connected to remote analysis system 50 via the Internet 40; thus database 78 has the ability to communicate with remote analysis system 50 via the Internet 40, as seen in Figure 3)** [Column 15, lines 17-20, Column 17, lines 25-27, Figure 3];

(b) wherein said at least one leader work machine transmits said anomaly information **(fault code)** to said anomaly handling terminal apparatus through said third communication means **(work order 166 is transmitted electronically to a handheld device 168 associated with specific maintenance personnel assigned to carry out the maintenance; work order 166 is sent electronically to appropriate maintenance personnel that contains all of the critical operating data required to effectively schedule and carry out the maintenance)** [Column 17, lines 5-9, 21-27]; and

(c) wherein said anomaly handling terminal apparatus performs anomaly handling for said construction machine at which said anomaly occurred, based on said anomaly information **(management report can advise the person or entity that owns or operates the asset 31; carrying out said work order to maintain the asset)** [Column 11, lines 42-44; Claim 9].

As per claim 62, Melby et al. teaches a management system for work machines that perform prescribed work by operation of a plurality of work machines, comprising:

(a) a plurality of work machines, said plurality of work machines being respectively including a first communication means facilitating reciprocal communications directly between said plurality of work machines [**see analysis of claim 33(a) above**];

(b) a server apparatus, wherein only at least one main working machine of said plurality of work machines is connected to the server apparatus by a second communication means facilitating reciprocal communications only between said server apparatus and said at least one leader work machine [**see analysis of claim 38(b) above**];

(c) work machine information detection means for detecting work machine information provided in each of said plurality of work machines [**see analysis of claim 33(c) above**];

(d) a database for storing data for managing said plurality of work machines, and management information production means for producing management information based on said work machine information and on said data stored in said database, provided at said server apparatus end [**see analysis of claim 33(d) above**];

(e) in conjunction with work progress of said plurality of work machines, said work machine information is detected by said work machine information detection means, and said work machine information so detected is transmitted to said at least

one main work machine through said first communication means [**see analysis of claim 33(e) above**];

(f) said at least one main work machine transmits said transmitted work machine information to said server apparatus through said second communication means [**see analysis of claim 33(f) above**];

(g) said server apparatus automatically produces said management information based on said transmitted work machine information and on said data stored in said database, and transmits said management information to said at least one leader work machine through said second communication means [**see analysis of claim 33(g) above**];

(h) said at least one leader work machine transmits work instructions to other work machines of said plurality of work machines through said first communication means, based on said transmitted management information [**see analysis of claim 33(h) above**];

(i) judgment means, provided in said at least one leader work machine for judging whether communications are possible or impossible by said second communication means between said at least one leader work machine and said server apparatus **(receiver 35 can send out a query signal on a predetermined basis to be received by the receiver 35 when the two units 32 and 35 are sufficiently close to communicate reliably with one another)** [Column 7, lines 38-53];

(j) wherein, when it is judged by said judgment means that communications by said second communications means are impossible, first latest management

information received by said main work machine via said second communication means and second latest work machine information received by said at least one leader work machine via said first communication means are stored in said memory by said main work machine **(sensed operating conditions of the forklifts 31 are preferably stored in a memory of the data acquisition device 32 for subsequent communication to a remote analysis system)** until it is judged by said judgment means that communications by said second communication means have become possible **{when the data acquisition unit 32 contacts receiver 35, the receiver 35 can send a first signal back to the data acquisition unit 32 to begin transmitting the acquired data; at the completion of the data transfer, the receiver 35 can send a second signal back to the data acquisition unit 32 to acknowledge the receipt of the transmitted data; thus, when communications are possible, data is transmitted between work machines}** [Column 6, line 65 – Column 7, line 1, Column 7, lines 45-51].

Furthermore, it was known at the time of the invention that merely providing an automated way to replace a well-known activity which accomplishes the same result is not sufficient to distinguish over the prior art. *In re Venner*, 262 F.2d 91, 95, 120 USPQ 193, 194 (CCPA 1958). Furthermore, it is well settled that it is not "invention" to broadly provide a mechanical or automatic means to replace manual activity which has accomplished the same result. In re Venner, 120 USPQ 192.

As per claim 63, Melby et al. teaches a work machine management system for work machines that perform prescribed work by operation of a plurality of work machines, comprising:

(a) a processor **{data is transmitted via the Internet, a plurality of networked computers that each have a data processor}**;

(b) a plurality of work machines, said plurality of work machines respectively including a first communication means facilitating reciprocal communications directly between said plurality of work machines [**see analysis of claim 33(a) above**];

(c) only at least one leader work machine of said plurality of work machines being connected to said processor by a second communication means facilitating reciprocal communications only between said processor and said at least one leader work machine of said plurality of work machines [**see analysis of claim 38(b) above**];

(d) work machine information detection means for detecting work machine information, provided in each of said plurality of work machines [**see analysis of claim 33(c) above**];

(e) a database for storing managing data, for managing said plurality of work machines, and management information production software producing management information based on said managing data and said work machine information, operably connected to said processor [**see analysis of claim 33(d) above**];

(f) said processor, when said at least one leader work machine is determined, transmitting said managing data stored in said database and said

management information production software to said at least one leader work machine through said second communication means [**see analysis of claim 33(g) above**];

(g) wherein, in conjunction with work progress of said plurality of work machines, said work machine information is detected by said work machine information detection means provided in said plurality of work machines, and said work machine information is transmitted to said at least one leader work machine or machines through said first communication means [**see analysis of claim 33(e) above**];

(h) wherein said at least one leader work machine produces said management information, based on work machine information transmitted from said plurality of work machines through said first communication means, and on managing data and management information production software transmitted from said management system through said second communication means [**see analysis of claim 33(g) above**], said at least one leader work machine manages said plurality of work machines by transmitting said management information to other work machines of said plurality of work machines in accordance with said first communication means, based on said management information, said at least one leader work machine transmits said managing data so updated to said management system, by said second communication means, every time a certain time period elapses **(receiver 35 is connected to local controller 36 and is programmed to periodically transmit the information stored therein to the remote analysis system 50 for analysis;** [Column 8, lines 23-25, further see analysis of claim 33(h) above]; and

(h) said processor updates content stored in said database using said managing data **(data in the form of new commands, program updates, instructions, and the like can be sent to the data acquisition unit 32 from the receiver 35)** [Column 7, lines 54-61].

As per claim 64, Melby et al. teaches a work machine management system for work machines that perform prescribed work by operation of a plurality of work machines, comprising:

(a) a processor **{data is transmitted via the Internet, a plurality of networked computers that each have a data processor}**;

(b) a plurality of work machines, wherein said plurality of work machines respectively including a first communication means facilitating reciprocal communications directly between said plurality of work machines [**see analysis of claim 33(a) above**];

(c) only at least one leader work machine of said plurality of work machines being connected to the processor **(remote analysis system 50)** by a second communication means facilitating reciprocal communications only between said processor at said at least one leader work machine [**see analysis of claim 33(b) above**];

(d) work machine information detection means for detecting work machine information, provided in each of said plurality of work machines [**see analysis of claim 33(c) above**];

(e) a database storing managing data for managing said plurality of work machines, and management information production software producing management information based on said managing data and work machine information, provided at said processor [**see analysis of claim 33(d) above**];

(f) wherein when said at least one leader work machine is determined, said managing data **(operational characteristics of the particular asset 11 being tracked, such as the physical requirements or limitations of the asset (mast height, load capacity, types of tires, for example), the type of fuel used, and the period of time or usage between the performance of periodic maintenance; time duration of use (and non-use), distances traveled, the extent of fork usage, the nature of hydraulic system utilization, and the like)** stored in said database **(analysis controller database 78)** and said management information production software are written to said at least one leader work machine **(data acquisition device 32 is provided on each of the forklifts 31 for sensing and storing one or more characteristics of the associated forklift)** [Column 4, lines 34-44, Column 6, lines 48-50, 52-63];

(g) wherein, in conjunction with work progress of said plurality of work machines, said work machine information is detected by said work machine information detection means provided in said plurality of work machines, and said work machine information so detected is transmitted to said at least one leader work machine through said first communication means [**see analysis of claim 33(e) above**];

(h) wherein said at least one main work machine produces said management information based on work machine information transmitted from said plurality of work machines to said at least one leader work machine in accordance with said first communication means, and on said managing data and management information production software [**see analysis of claim 33(g) above**], said at least one leader work machine manages said plurality of work machines by transmitting said management information to other work machines of said plurality of work machines in accordance with said first communication means, based on said management information so produced [**see analysis of claim 33(h) above**], and said at least one leader work machine updates said managing data **(receiver 35 is connected to local controller 36 and is programmed to periodically transmit the information stored therein to the remote analysis system 50 for analysis;** [Column 8, lines 23-25]; and

(i) content stored in database in said processor is updated by the at least one leader work machine writing said updated managing data in accordance with said second communication means to said processor **(data in the form of new commands, program updates, instructions, and the like can be sent to the data acquisition unit 32 from the receiver 35)** [Column 7, lines 54-61].

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PETER CHOI whose telephone number is (571)272-6971. The examiner can normally be reached on M-F 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz can be reached on (571) 272-6729. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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April 22, 2008

/P. C./
Examiner, Art Unit 3623

/Romain Jeanty/
Primary Examiner, Art Unit 3623